

MACKINDER'S EAGLE OWL *BUBO CAPENSIS MACKINDERI* BREEDING IN THE KENYAN RIFT VALLEY

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The Cape Eagle Owl *Bubo capensis* is an African endemic species with an eastern distribution from northern Ethiopia to Cape Province, South Africa (Snow 1978). Although it occurs at sea-level in coastal Cape Province it is essentially a montane species north of central coastal Natal, generally being associated with mountainous country and open rocky situations with grassland, sometimes in the vicinity of evergreen forest (Benson & Irwin 1967, Snow 1978). Of the three recognized races, *mackinderi* is the largest in size and occurs from Zimbabwe north to Kenya (Steyn & Tredgold 1977). In East Africa *mackinderi*, popularly known as Mackinder's Eagle Owl, is a locally common resident in montane areas of western and central Kenya at altitudes of 2400–4200 m a.s.l.; it may wander as low as 1800 m in central Kenya, generally in the vicinity of a higher land mass (Sessions 1972, Britton 1980). It is also known from two localities in Tanzania—Mt Luhoto at 1950 m and Olosirwa at 2700 m (Britton 1980)—but all breeding records are from Kenya, at 2400–4200 m (Britton 1980, Brown & Britton 1980).

In October 1985 I found a pair of *mackinderi* breeding at 1900 m a.s.l. in the Kenyan Rift Valley near Lake Elmenteita. The habitat, situation and altitude of the site are of interest when compared with known breeding sites in Kenya, while my observations also provide some behavioural information additional to that given in the two published accounts of the biology of this little-studied species (Sessions 1972, Steyn & Tredgold 1977).

LOCALITY

Observations were made at the active diatomite mine at Kariandusi (0°27'S, 36°17'E) on the eastern scarp slope of the Rift Valley overlooking Lake Elmenteita. The mine is adjacent to the National Museums of Kenya Kariandusi Prehistoric Site and consists of a deep quarry, the vertical sides of which are stepped and have small tunnels (some of them no more than caves) quarried into the diatomite at various levels. The quarry is a breeding site for several bird species, including Horus Swifts *Apus horus* and Nyanza Swifts *A. niansae*.

OBSERVATIONS

5 October 1985

On a visit to the quarry at 17:30 with the mine manager, Mr Ray Terry, to observe the swift colony, I noticed two large owlets sitting just inside a shallow cave in the cliff face. The floor of the cave was covered with fragments of diatomite and there was no trace of any nest material; a little debris towards the back of the cave possibly consisted of prey remains, pellets, etc. Close observation with a telescope revealed the birds to be young Mackinder's Eagle Owls, my identification later being confirmed by the arrival of an adult. The owlets were covered with long grey-brown mesoptile down, narrowly barred dark brown on the underparts and more broadly barred on the upperparts. The long fluffy down on the thighs was tawny-tinged, the tarsi and toes were creamy white. The remiges were partly grown, very dark brown with pale tawny spots. The birds had grey faces, slightly darker around the eyes, with

a narrow blackish border to the facial disc and a whitish patch at the base of the bill extending below and between the eyes. Short downy ear-tufts were visible. The bill and cere were dark grey, the eyes deep yellow. The owlets were quiet, sitting upright and leaning against one another while dozing. At about 18:50, 25 min after sunset, they became alert and moved around a little. An adult flew into the quarry at 19:00, circled around giving sharp barks before landing on a ledge close to us. As it was becoming too dark for further observations, we left the quarry.

11–12 October 1985

R. McVicker, C. Taylor, R. Terry and I visited the site at 18:00 on 11th. The owlets were noticeably larger than on 5 October but were still largely covered with mesoptile down although a few dark first-adult feathers were showing on the upperparts. The birds called at intervals from 18:30 (sunset), giving loud wheezing calls *cheeech* or *skeeer* which were sometimes quite staccato—almost wheezy barks. An adult briefly appeared at 19:00 giving no calls, and we then left the quarry.

R. McVicker and I returned at 23:00 but heard no calls or other evidence of activity before we left at midnight. We returned at 05:20 on 12th (about 55 min before sunrise), when the chicks were calling frequently. At 05:45 (first light) an adult flew into the quarry and landed on a cliff ledge out of sight. At 06:03, possibly the same adult returned with a small Rock Hyrax *Procapra johnstoni* in its talons; as it arrived it gave two barks followed by deep single and multiple hoots. It circled around the quarry giving grunts interspersed with barks and hoots, then it landed on a ledge about 150 m from us and began to dismember the prey; by this time the chicks were calling less frequently. At 06:45, when it had eaten more than half of the prey, the adult carried the remainder to the chicks (which had stopped calling) and fed it to them in small pieces. The adult then flew to a cliff ledge, where it roosted beneath some bushes. During these observations, calls were tape recorded by R. McVicker.

20 October 1985

When I visited the site at 08:15 both owlets were out of the nest-cave, one sitting on a ledge below the cave and the other on a ledge below the first, about 4 m above the floor of the quarry. They may have fluttered down to these positions. Both birds had well-feathered upperparts, including upperwing coverts, and one or two dark feathers on the breast, while the remiges were well-grown; there was still much mesoptile down on the head and the underparts and the facial discs were washed deep tawny. Their eyes were orange, paler and less fiery than those of the adult, their bills were almost black, their ceres and claws dark grey.

Both birds occasionally made wheezing calls. Although I examined likely roosting sites I could not locate the adults. I walked into the quarry and approached the lower owlet, which sat upright and watched me silently. I photographed the bird from a range of 11 m without disturbing it.

At 09:55 I returned to find the sun full on the cliff-face and both owlets out of sight. The upper bird had retreated along its ledge and into a shallow shady cave where it stood and leaned forward, with ruffled plumage (especially on the face) and with wings drooping and angled forward, stretching its neck forward and looking fixedly to its left: although the bird was obviously in some kind of threat posture I was unable to see anything towards which this display was directed. The lower bird had moved to the end of its ledge, where it was roosting behind small tufts of grass

in the deep shade afforded by a small shrub. I was unable to locate the adult owls.

DISCUSSION

Distribution

In Kenya, Mackinder's Eagle Owl is known to breed above 2400 m, from Mt Elgon east to the Mau Plateau and from the Aberdares to Mt Kenya (Britton 1980). Sessions (1972) states that its breeding range is interrupted by the Rift Valley but suggests that birds could travel between the breeding areas east and west of the Rift; the occasional Rift Valley sightings have been attributed to wanderers (Britton 1980).

Sessions (1972) proposes that altitude is a major factor governing the lowest limit of the breeding range, which he puts at about 2440 m near the equator. Kariandusi lies approximately midway between the known breeding areas on the Mau Plateau and the Aberdares, and is 500 m lower in altitude than any other known breeding site in East Africa. Situated towards the bottom of the scarp slope, it is not even as high as some of the hills rising from the floor of the Rift in the Naivasha, Nakuru and Elmenteita area. It is therefore possible that this species is not inhibited by altitude from breeding in the Rift Valley and that records in this area may not all refer to wanderers: breeding pairs may occur in suitable habitat, both on the escarpment and on the valley floor (see *Ecological Requirements*, p. 16).

Habitat and nest site

On the Mau Plateau the preferred habitat appears to be grassland with valleys containing temporary or permanent streams; light timber and rocky places are favoured but are not essential features (Sessions 1972). Regardless of terrain, the feature common to all the Mau Plateau breeding sites known to Sessions (1972) was the presence of water, on which territories were centred and near which nests were located.

The Kariandusi quarry is in rocky country with mixed grassland and scrub and has no stream running very close to the nest site. A small (probably seasonal) stream runs, amid dense scrub and small trees, down a narrow gully outside the quarry and the only other water is a small shallow pool on the quarry floor. There are a few sizeable trees in the quarry area but the woody vegetation within and beyond the quarry is mostly bushes, scrub and small trees. This area is therefore not markedly similar to the breeding sites described by Sessions (1972). However, the nest site itself closely resembles that of a pair of Mackinder's Eagle Owls observed at granite hills in Shangani District, Zimbabwe (Steyn & Tredgold 1977). This was in one of the solution caves in a narrow granite amphitheatre and the photograph of the site (plate 2b of Steyn & Tredgold 1977) shows an area of cliffs and caves very similar to that at Kariandusi. The Zimbabwe site is apparently typical of known sites in granite area of that country and the proximity of water to such sites is probably incidental; even if streams occur, they dry up during the dry season when the birds breed (Steyn & Tredgold 1977).

Breeding dates

The owlets were aged, and the approximate laying date calculated, from information given by Sessions (1972) and Steyn & Tredgold (1977). The owlets were thought to be about six weeks old on 5 October (both birds were approximately the same size), and the subsequent development of the birds confirmed this estimate. Thus they were

hatched about 24 August and, taking the incubation period as 34–36 days, the eggs would have been laid about 16–18 July, well into the inter-rains period in the Rift Valley (Brown & Britton 1980).

Peak laying months at Mau Narok are in the dry season, from October to February, while there are too few records from other areas of Kenya to show a pattern the Kariandusi site, breeding also takes place in the dry season (Steyn & Tredgold 1977, Irwin 1981).

Activity times and behaviour at the nest

Steyn & Tredgold (1977) recorded adults feeding owlets only during the hours of darkness, although the adult female was active at the nest before dark. Sessions (1972) observed that in Kenya this species is not entirely nocturnal, often hunting before sunset and in the early morning, but he gives no indications of the times at which chicks are fed. My observations show that at six weeks of age chicks began to make their food-soliciting wheezing calls at sunset and that on two occasions an adult first appeared at the nest (without food) about 20 min after sunset. On 12 October the chicks were calling an hour before sunrise but were not fed until 30 min after sunrise, although an adult was in the quarry before sunrise and the female had returned with prey at first light.

Bubo capensis is a member of the Eagle Owl *B. bubo* superspecies (Snow 1978) and behaviour observed at Kariandusi resembles that given by Cramp (1985) for *B. bubo*. Young *B. bubo* start giving food-calls near sunset, and hunting by adults is essentially nocturnal. The female dismembers food for the young until they are at least one month old (the Kariandusi owlets were fed dismembered prey at six weeks of age). *B. bubo* chicks are fed at intervals throughout the night, as were the *B. capensis* chicks at Shangani (Steyn & Tredgold 1977).

It is perhaps unusual that the Kariandusi female once fed the chicks only after eating from the prey herself, even though the chicks were calling for food. This behaviour is not recorded by Steyn & Tredgold (1977) or for *B. bubo* by Cramp (1985). Possibly the female was inhibited from approaching the nest by the presence of observers, but it is more likely that the chicks had been fed before dawn; after eventually receiving a small meal they appeared quite satisfied.

At eight weeks old one Kariandusi owlet showed a threat posture very similar to the forward-threat posture described by Cramp (1985) for *B. bubo*. Sessions (1972) describes a similar threat posture adopted by a captive fully-fledged young *B. capensis* in response to attacks by a Peregrine Falcon *Falco peregrinus*.

Roosting

At Kariandusi an adult was seen to roost near the nest. When out of the nest the chicks sought shade from full mid-morning sun when roosting (see also Sessions 1972) and, like the adult, adopted an upright roosting posture with half-closed eyes, similar to that of *B. bubo* (Cramp 1985).

Voice

The wheezing food-call of the chicks is similar to that described by Cramp (1985) for *B. bubo* and, as in that species, it is audible for a considerable distance. Adults' calls were similar to those described by Sessions (1972).

Ecological requirements

Unlike the birds studied by Sessions (1972), but in common with the granite country Zimbabwe birds (Steyn & Tredgold 1977), the Kariandusi owls did not appear to be closely associated with water and it is unlikely that they obtained any

food at the nearest stream. This species tends to rely on one particular prey species (which varies according to locality) and occurs in areas where there is a superabundance of this prey (Sessions 1972, Steyn & Tredgold 1977). At Kariandusi Rock Hyraxes are common and may have been a major prey item, as they are on Mt Kenya (Sessions 1972); such prey is widely available locally in Rift Valley areas which the bird could perhaps colonize (see Habitat and nest site, above).

Sessions believed that these birds require a relatively cool climate and suggests that this is one reason why they do not occur at lower altitudes near the equator. At 1900 m, Kariandusi is not cool and the quarry itself becomes very hot during the day, as no breeze circulates within it. The breeding and roosting caves probably remain cooler than the surrounding countryside during the day, but adults roosting on quarry ledges must be able to tolerate considerable heat. Thus high temperatures should not prevent this owl occurring at sites low on the escarpment and on the Rift Valley floor in this area, but it may require relatively cool nesting sites such as caves.

Relationships with other large owls

Sessions (1972) considered that Mackinder's Eagle Owl suffers little competition from other large owls at Mau Narok. No other large owl was seen at Kariandusi but both Verreaux's Eagle Owl *B. lacteus* and Spotted Eagle Owl *B. africanus* occur in the vicinity of Lake Elmenteita, only 2 km to the west, as does Marsh Owl *Asio capensis* rarely (pers. obs.). In such an area of potential overlap with other large owls, a study of relationships between these and Mackinder's Eagle Owl would be of value.

Reactions to human presence

One of the most surprising aspects of the birds' presence at Kariandusi was their tolerance of the considerable human activity at the mine and the adjacent prehistoric site. These owls are confiding and unafraid of man (Sessions 1972, Steyn & Tredgold 1977, pers. obs.) but in Zimbabwe they usually nest in areas remote from human habitation (Steyn & Tredgold 1977). Sessions (1972) does not mention the proximity of human activity to nests at Mau Narok. Before my observations in October 1985 the presence of the owls at the quarry had not been recorded; this is an excellent example of how easily the birds may be overlooked, even though in the breeding season they can be remarkably nosy and obvious (Sessions 1972). Thus it is quite possible that other pairs, hitherto undetected, may occur in this area.

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